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**Flight.** *H. Guyford Stever, James J. Haggerty and The Editors of Life.* Time-Life Books, New York, 1965. 200 p., illus. (72 p. in full color). \$3.95.

This book is the 12th volume in the Life Science Library series, and conforms in format to the rest of the series, that is, text chapters are each followed by a picture essay. These picture essays, many in full color, are one of the best features of the book. In most cases, they are not only excellent pictorially, but are also full of interesting and worthwhile information which supplements the main text. The essays, "Nature's Flying Machines," following Chapter 2, and "The Cockpit: A Crowded Command Post," following Chapter 5, are particularly noteworthy in this respect. There are illustrations in the text as well, both photographs and line drawings, but these often have only a remote connection with the material they are presumably intended to illustrate.

The book has eight chapters. The first contains a brief historical review of the major developments leading to modern powered flight. Other chapters cover aerodynamics, power plants, structures, and navigation. The later chapters concern themselves largely with airline and military aviation today (aviation that is not military or airline is neglected almost entirely), with current research programs, and with plans for future developments. The information on current activity is very up-to-date.

The style is rather heavily journalistic in many places, with too many "clever" phrases and expressions for this reviewer. In fact, one gets the impression that Dr. Stever's role in the writing of the final text must have been minimal. The treatment, especially of the more technical and scientific material, suffers somewhat from oversimplification and superficiality, conveying erroneous impressions in some cases, and on occasion, downright inaccuracies. One therefore hesitates to recommend the book to the serious scientific reader.

There is a short glossary, "The Argot of the Airman," which includes some common, but also some rather esoteric terms; a chronological listing of some of the more important aviation milestones from 1783 to date; and a very short bibliography titled "Further Reading," as well as a detailed index at the end of the book.

HENRY H. BRECHER

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**Structural and Tectonic Principles.** *Peter C. Badgley.* Harper's Geoscience Series, Harper & Row, Publishers, New York, 1965. xvii+521 p. \$13.95.

In his opening short chapter, Dr. Badgley notes that *structural geology*, the study of individual structures such as anticlines, faults, etc., and *tectonics*, the study of the pattern and evolution of large-scale crustal units such as basins, disturbed belts, etc., are generally but inappropriately considered as separate subjects. His purpose, therefore, "has been to integrate these two approaches in a single volume, not simply for the sake of convenience, but rather because the two subjects are closely interrelated." He achieves his purpose uncommonly well.

In the next eight chapters, Dr. Badgley, beginning with a 45-page discussion of the behavior of rock materials, systematically covers fold structures (47 pages), jointing and fracture analysis (58 pages), faults (29 pages), including additional chapters on thrust faults (67 pages) and strike-slip faults (22 pages), structures in metamorphic rocks (35 pages), and tectonic aspects of igneous rocks (70 pages). In each of these chapters, terms are defined, classification is discussed, genesis is considered, and the structural element is related to the large-scale tectonic framework. Other divisions of geology, such as stratigraphy, petrography, historical geology and economic geology, are often brought into the discussion as they are pertinent, thus demonstrating further the interrelationship of all these aspects. The last two chapters, which contain factual data on worldwide orogeny (73 pages) and tectonic patterns and classification (51 pages), are good syntheses of these subjects.

The material in this book is attractively presented in large, easy-to-read type, which is printed in double columns on slick paper, and in numerous illustrations, both line drawings (a few of which are reduced too much) and photographs. Significant terms and chapter sub-headings stand out in distinct bold-face type. An especially useful feature is that each chapter has its own bibliography, even though this results in some duplication from chapter to chapter. At the end of this book, there is a composite index of authors, and a more-than-adequate index of subjects.

In summary, this book can serve effectively both as a text for upper division undergraduate students in geology and related earth sciences, and as a reference or refresher for the professional.

ARTHUR MIRSKY

**Space Probe and Planetary Exploration.** William R. Corliss. D. Van Nostrand Co., Inc., Princeton, N. J. 1965. 542 p. \$7.75.

The author of this book is a physicist who has already written two books, *Propulsion Systems for Space Flight* and *Radioisotopic Power Generation*, as well as many technical articles and educational booklets. He has practical experience in his subject; at one time he was a space propulsion specialist with General Electric. Thus, Mr. Corliss is well equipped to inform the non-specialist scientist or engineer about the problems and scientific objectives of space flight, the techniques and instrumentation designed to obtain data deep in space, and the methods of sending data back to the earth. In addition, the book was written under the sponsorship of the National Aeronautics and Space Administration, so that the author had direct contact with many individuals currently engaged in the explosive advances in space technology. The result of all this is a lively and well-written account covering the whole subject, from a simple historical and scientific introduction, to considerations of space-probe design and propulsion, to the complicated sensing apparatus designed to sample and analyze the constitution of the crust of a distant planet.

The book is divided into three parts, (1) The Interplanetary Challenge; (2) Missions, Spacecraft, and Techniques; and, finally, (3) Scientific Instruments, which part takes up nearly half of the book.

The introductory section includes a chapter entitled "History of Interplanetary Inquiry and Exploration," which is worthy of special mention. It manages to trace the history of astronautics from 4000 B.C. to 1964 A.D. with only one mention of a Soviet achievement, and that a casual one in a footnote. Throughout the remainder of the book the same deficiency is apparent; there is virtually no mention of space probe techniques other than those of the U.S.A. One wonders why.

In Chapter 4, entitled "Integrating the Space Vehicle," the author carefully divides the functions and control of the spacecraft into a set of "systems and interfaces."

The second section of the book provides an understandable account of space mechanics, and discusses the various systems of the spacecraft-ground facilities "complex," communications, data processing, navigation, and control. The chapters on the launching of vehicles and on spacecraft design are also based on a system, sub-systems, and interfaces approach. With this and with the use of many graphs, photographs, and explanatory diagrams, Mr. Corliss has succeeded in giving a very clear account of the problems of probing space and the methods the United States has employed to deal with them.

The third section, on Scientific Instruments, illustrates the enthusiasm and great imagination of those responsible for making instruments to measure the interplanetary medium, planetary atmospheres and crusts, and to detect life. Some of the instruments, like the "penetrometer," are so simple that one would be surprised if they were not giving useful information in a few years, but others, like the devices for remote age determinations by isotope analysis or even the simple but remote examination of thin sections by petrographic microscope seem to offer enough problems to occupy attention for some time yet.

This first edition contains very little information about the scientific results of interplanetary probes; I see a need very soon for a second edition with such an additional section.

COLIN BULL

**Teaching Genetics.** C. D. Darlington and A. D. Bradshaw, Editors. Philosophical Library, New York. 1963. x+117 p. \$7.50.

This book is the result of a symposium on teaching methods in genetics held presumably in Great Britain in the early 1960's. Twenty leading geneticists contributed ideas in an effort to have the subject taught "more accurately, more vividly, and, not least importantly, more easily."

The chapters can be divided into two major categories: 1) those that describe specific experiments or discuss specific genetic mechanisms, and 2) those that present the broad pedagogical problems of teaching genetics. A broad range of organisms are included in the former group, from bacteria and fungi to humans and angiosperms. Topics from transduction and parasexuality to cytoplasmic inheritance and tetrad analysis are covered. Chapters in the second group contain discussions of biometrical genetics and cytology as well as those of the problems of designing overall genetic curricula.

As can be expected from such a range of topics, the chapters vary greatly in content. Technical aspects of bacteriophage culture are presented in the second chapter, while the observation that "*Drosophila* can easily be caught on rotten fruit" is given in the fifteenth article. Some chapters give extremely detailed specific "cookbook" methods for preparation of media and techniques, as well as lists of pertinent references, while others presuppose a knowledge of appropriate methodology and have no references at all.

Although providing "for the use of a wide public," this combination of topics results in a book that varies too widely in its contents. Furthermore there is no index, and the well prepared list of material sources includes only British ones, thus severely limiting its use for American readers.

Perhaps everyone can get something from this volume, but is it worth the trouble?

DERRY D. KOOB